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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/588,997	06/06/2000	Curtis Lee Carrender	E-1804	9316

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EXAMINER

NGUYEN, NAM V

ART UNIT

PAPER NUMBER

2635

DATE MAILED: 11/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/588,997

Applicant(s)

CARRENDER ET AL.

Examiner

Nam V Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/6/00.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 June 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

The application of Carrender et al. for a "phase modulation in RF tag" filed June 6, 2000 has been examined.

Claims 1-28 are pending.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, 10-13, 16-22 and 25-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirata et al. (US# 5,247,305).

Referring to claims 1, 17 and 25, Hirata et al. disclose responder in movable-object identification system as recited in claims 1, 17, and 25. See Figures 1, 14 and respective portions of the apparatus and method.

Hirata et al. disclose a radio frequency transponder (B) (column 1 lines 50 to 60; see Figure 1), comprising:

An antenna (B1) for receiving an interrogation signal (column 3 lines 46 to 50);

A memory (36; see Figure 2) that stores an information code (column 3 lines 56 to 63; column 4 lines 4 to 9); and

A phase modulator (C) coupled to the antenna (B) and memory (36) (column 5 lines 42 to 52), the phase modulator (C) being structured to produce a backscatter response signal (S2) by phase modulating the interrogation signal (S1) according to the information code (i.e. ID code) (column 3 line 63 to column 4 line 3; column 6 lines 25 to 40).

Referring to claim 10, Hirata et al. disclose a radio frequency communication system (column 3 lines 4 to 10; see Figure 1), comprising:

An interrogator (A) that transmits a radio frequency interrogation signal (S1) and receives a backscatter response signal (S2) (column 3 lines 11 to 21);

A transponder (B) (column 3 lines 46 to 50) that receives the interrogation signal (S1) and transmits the response signal to the interrogator (S2) (column 3 lines 61 to 68), the transponder (B) includes to the extent as claimed with respect to claim 1 above.

Referring to claims 2, 11, 18, and 26, Hirata et al. disclose the transponder of claims 1, 10, 17 and 25, wherein the phase modulator (C) includes:

A switch (61; see Figure 5) having a control terminal (P3) and first (P1) and second conduction terminals (P2) (column 6 lines 44 to 49), the first conduction terminal (P1) being coupled to the antenna (B1) (column 6 lines 49 to 50; See Figure 1);

A quarter-wavelength stub (184) coupled to the second conduction terminal (P2) of the switch (61) (column 13 lines 48 to 56; see Figures 14 and 15); and a driver (D) coupled between the memory (36) and the control terminal (P3) of the switch (61) (see Figure 2), the driver (D) being structured to produce a modulating signal corresponding to the information code (i.e. ID

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code) (column 7 lines 9 to 12), the modulating signal alternately opening and closing the switch (61) (column 7 lines 12 to 18).

Referring to claims 4, 12, 20 and 27, Hirata et al. disclose the transponder of claims 1, 10, 17 and 25, wherein the phase modulator (C) includes a diode (53; see Figure 4) coupled to the antenna (B1) and a driver (D) coupled between the memory (1140) and the diode (53), the driver (D) being structured to produce a modulating signal corresponding to the information code (column 7 lines 9 to 12), the modulating signal being a variable voltage that modulates a capacitance of the diode (63) to phase modulate the interrogation signal (S1) and thereby produce the response signal (S2) (column 7 lines 38 to 40; column 9 line 58 to column 10 line 7).

Referring to claims 3, 5, 19 and 21, Hirata et al. disclose the transponder of claims 1, 4, 18 and 20, wherein the driver (D) includes a microprocessor (1130) (column 14 lines 62 to 64; see Figure 17).

Referring to claims 6, 13 and 22, Hirata et al. disclose the transponder of claims 1, 10 and 17, wherein the phase modulator (C) includes:

A first diode (71; column 8 lines 10 to 16; see Figure 6) having first (P3) and second ends (J3), the second end being coupled to the antenna (B1) (see Figure 1);

A second diode (73; column 8 lines 3 to 10) having first (J3) and second ends (P2); the first end (J3) being coupled to the antenna (B1) and the second end of the first diode (71);

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A quarter-wavelength stub (184; see Figure 15) coupled to the second end of the second diode (190) (column 13 lines 48 to 56);

A parallel RC circuit (185 and 186) coupled between the stub (184) and a reference voltage (i.e. Ground) (column 13 lines 48 to 62; see Figure 15); and

a driver (D) coupled between the memory (1140; see Figure 17) and the first end (P3) of the first diode (71), the driver (D) being structured to produce a modulating signal corresponding to the information code (column 7 lines 9 to 12).

Referring to claims 7, 14 and 28, Hirata et al. disclose the transponder of claims 1, 10 and 17, wherein the phase modulator (C) is structured to include in the response signal (S2) a plurality of phases (i.e. phase different) in addition to a phase that is substantially identical to a phase of the interrogation signal (S1) (column 5 lines 46 to 66).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8-9, 15-16 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata et al. (US# 5,247,305) as applied to claims 1, 10 and 17 above, and in view of Beccone et al. (US# 3,656,069).

Referring to claims ⁸~~7~~-9, 14-16, 23-24 and 28, Hirata et al. disclose a responder in a movable-object identification system of claims 1, 10, 17 and 25, however, Hirata et al. did not explicitly disclose the phase modulator includes a first, a second and a third phase changers that produces in the response signal respective first, second and third phases that are each different than a phase of the interrogation signal, each of the phase changers include a switch coupled between the antenna and a stub having a length other than a wavelength of the interrogation signal.

In the same field of endeavor of multiphase digital modulator, Beccone et al. teach that the phase modulator (see Figure 1) includes a first (i.e. carrier source original phase), a second (A) and a third phase changers (C) that produces in the response signal respective first (0 degree), second (225 degree) and third phases (90 degree) that are each different than a phase of the interrogation signal (zero degree reference), each of the phase changers include a switch (17 or 19) coupled between the antenna (15) and a stub having a length (A to B and A to C) other than a wavelength of the interrogation signal (column 3 lines 43 to column 4 lines 10) in order to obtain the best multi-phase modulation transmission strategy for transmitting backscatter signal.

One of ordinary skilled in the art recognizes the need to add the multiphase digital modulator of Beccone et al. in phase changer of the phase modulator of Hirata et al. because Hirata et al. suggest it is desired to change a signal phase between 90 degree to -90 degree or to

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change to different phases range (column 5 lines 46 to 50; column 6 lines 16 to 20 to 24) and Beccone et al. teach that providing first, second, and third diodes along the reflecting transmission line, each for short-circuiting the reflecting transmission line when actuated and actuated each of the phase by individual switches (column 1 lines 6 to 65) in order to provide four-level phase modulation to minimize the likelihood of faulty discrimination. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to add the multiphase digital modulator of Beccone et al. in phase changer of the phase modulator of Hirata et al. with the motivation for doing so would have been to produces a multiphase response signal that is transmitted back from the radio frequency transponder to the interrogator.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Teraura et al. (US# 6,079,619) disclose an identification tag for wireless communication with remote controller.

Cole et al. (US# 5,523,749) disclose an identification system for simultaneously interrogated labels.

Kawashima et al. (US# 4,963,887) disclose a full duplex transponder system.

Tyburski et al. (US# 4,912,471) disclose an interrogator-responder communication system.

Baldwin et al. (US# 4,870,419) disclose an electronic identification system.

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Carroll (US# 4,724,427) discloses a transponder device.

Henoch et al. (US# 4,358,765) disclose an apparatus for producing a single side band.

Slobodin (US# 4,242,663) discloses an electronic identification system.

Kaplan et al. (US# 3,984,835) disclose a homodyne communication system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nam V Nguyen whose telephone number is 703-305-3867. The examiner can normally be reached on Mon-Fri, 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Horabik can be reached on 703-305-4704. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Nam Nguyen
October 30, 2002



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